Environment and Climate Change Canada
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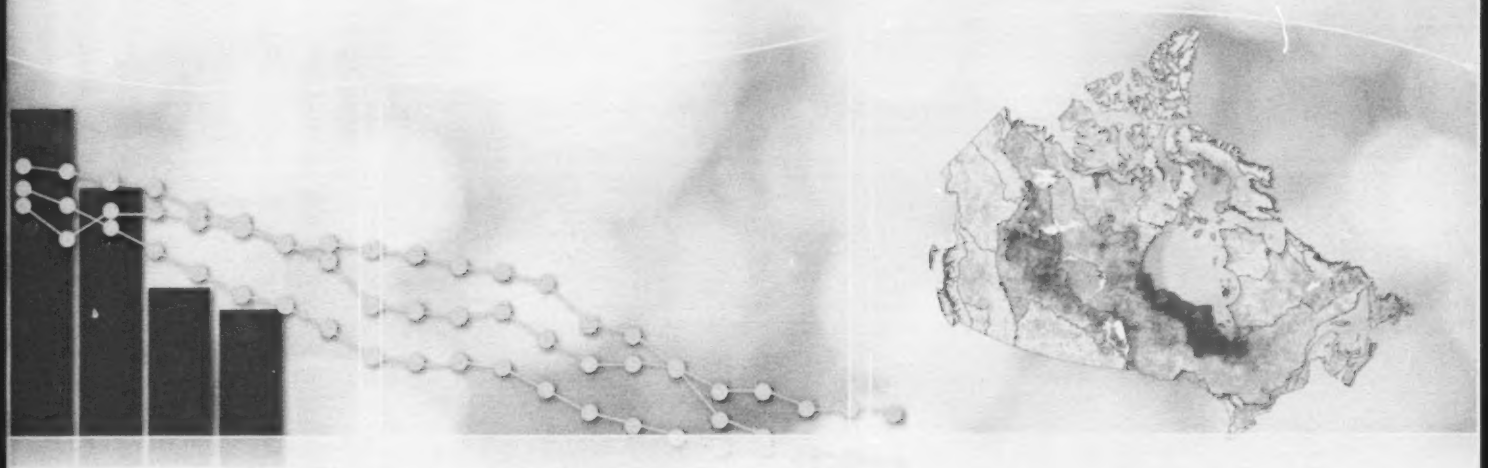
Canadian Environmental Sustainability Indicators

Sustainability of timber harvest



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Canadian Environmental Sustainability Indicators

Sustainability of timber harvest

August 2018

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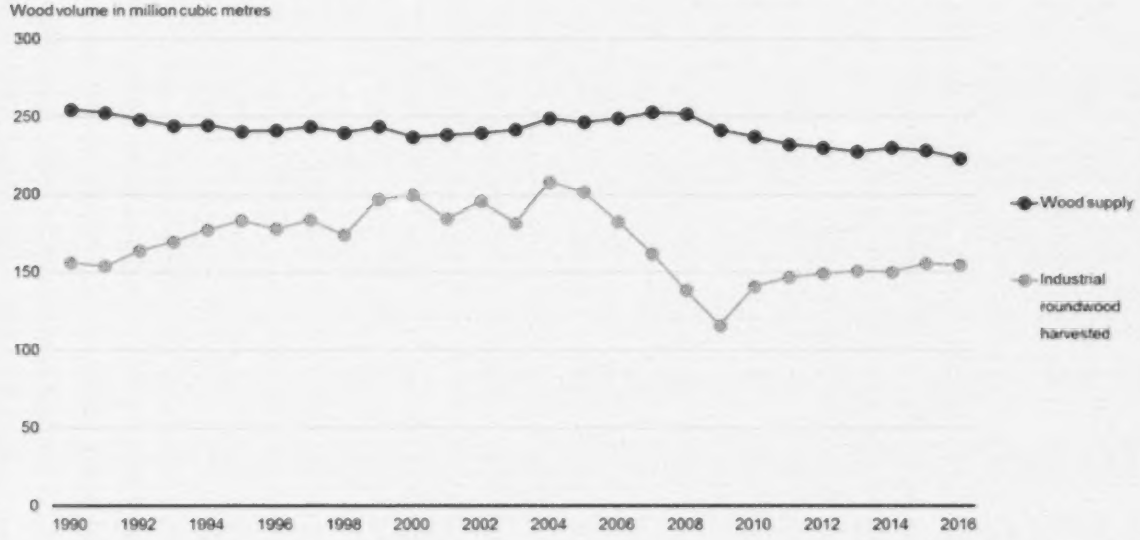
Sustainability of timber harvest indicator

About 38% of Canada's land area is covered in forests. Timber harvest is an important part of the Canadian economy. To ensure that forests can continue to provide timber, the harvests must remain below sustainable limits. The maximum sustainable harvest is known as the wood supply. The indicator compares the amount of timber harvested with the wood supply.

Key results

- Between 1990 and 2016, timber harvest in Canada ranged from 48% to 84% of the estimated wood supply.
- Canada's wood supply has remained relatively stable between 1990 and 2009, decreasing slightly since then.

Figure 1. Wood supply and annual harvest of industrial roundwood, Canada, 1990 to 2016



Data for Figure 1

Note: Wood supply data presented are for industrial roundwood only.
Source: Canadian Council of Forest Ministers (2018) National Forestry Database.

The harvest of industrial roundwood[1] reached a peak of 208 million cubic metres in 2004, declined to a low of 116 million cubic metres in 2009, then increased to reach 155 million cubic metres in 2016. This pattern is the result of economic factors, such as reduced demand for Canadian lumber due to the global economic downturn and the collapse in the United States housing market, and reduced global demand for Canadian pulp and paper products. There has been some recovery in recent years as the global economy has improved.

Sustainable forest management means ensuring that forests provide a broad range of goods and services over the long term. Forest managers plan for harvest levels that will not affect the long-term

[1] Harvested industrial roundwood is intended to be delivered to a mill (for example, logs and bolts, pulpwood) and also includes poles, pilings and some fuelwood.

sustainability of the forest resource. To determine the yearly level of harvest allowed, governments estimate the wood supply, which is the maximum volume of wood that can be harvested sustainably. Both the estimated wood supply and the volume of wood harvested fluctuate in response to a wide range of ecological, social and economic factors. Changes in wood supply are largely a result of adjustments in provincial forest management objectives. Comparing the amount of timber actually harvested to the estimated sustainable wood supply is one way to track forest management.

About the indicator

What the indicator measures

This indicator compares the amount of timber harvested with the estimated wood supply.

Wood supply is the volume of timber that can be harvested from an area over a specified period of time while meeting environmental, economic and social objectives. In the indicator, wood supply refers to industrial roundwood supplies only and does not include other types of harvest.

Why this indicator is important

Canada is committed to sustainable forest management, which is defined as "management that maintains and enhances the long-term health of forest ecosystems for the benefit of all living things while providing environmental, economic, social and cultural opportunities for present and future generations."[2] The Sustainability of timber harvest indicator is one measure of the success of Canada's forest stewardship.

The indicator supports the measurement of progress towards the 2016–2019 Federal Sustainable Development Strategy target: Between now and 2020, maintain Canada's annual timber harvest at or below sustainable wood supply levels.

It also supports Target 15.1 and Target 15.2 of the Sustainable Development Goals of the 2030 Agenda for Sustainable Development.

Sustainably managed lands and forests

This indicator supports the measurement of progress towards the following 2016–2019 Federal Sustainable Development Strategy long-term goal: Lands and forests support biodiversity and provide a variety of ecosystem services for generations to come.

[2] Natural Resources Canada (2018) Glossary. Retrieved on August 1, 2018.

Data sources and methods

Data sources

Wood supply and harvest estimates are taken from the National Forestry Database. The database was mandated through the Canadian Council of Forest Ministers and is maintained by the Canadian Forest Service of Natural Resources Canada.

More information

The data contained in the National Forestry Database are provided by provincial and territorial resource management organizations[3] and federal government departments. In December of every year, provinces, territories and federal agencies submit data that were collected the previous year. The data are compiled and published within six months of submission.For example, data for 2016 were provided by the provinces, territories and federal agencies in December 2017, and totals were published in June 2018. Data are published approximately 14 months after they are collected.

Canada's total area is estimated using the Land and freshwater area, by province and territory from Natural Resources Canada Atlas of Canada. The Canadian Forest Service uses the National Forest Inventory to track forest area over time.

The indicator includes data from 1990 to 2016 from all provinces, Yukon and the Northwest Territories. Nunavut is excluded because it is not a National Forestry Database partner.

Methods

The indicator compares wood supply to industrial roundwood harvest. Wood supplies from federal, provincial, territorial and private lands are summed to estimate Canada's wood supply. Similarly, Canada's industrial roundwood harvest is the volume of wood harvested from federal, provincial, territorial and private lands.

More information

Wood supply is the volume of timber that can be harvested from an area over a specified period of time while meeting environmental, economic and social objectives.[4] In the indicator, wood supply refers to industrial roundwood supplies only and does not include other types of harvest. Under sustainable forest management, forest managers plan for harvest levels that will not affect the long-term sustainability of forest resources.

Industrial roundwood is defined as sections of tree stems (with or without bark), logs, bolts, pulpwood, posts and pilings that are usually intended to be delivered to mills. Fuelwood (for industrial purposes) and firewood (for household use) are not part of the industrial roundwood harvest, although they contribute to the total roundwood harvest. Other forest products, such as Christmas trees, are not included.

Forest land is defined as an area of "land where tree canopies cover more than 10% of the total area and the trees, when mature, can grow to a height of more than 5 metres. Does not include land that is predominantly urban or used for agricultural purposes."

Other wooded land is defined as " Areas of land where 1) tree canopies cover 5 to10% of the total area and the trees, when mature, can grow to a height above 5 metres; or 2) shrubs, bushes and trees together cover more than 10% of the area. These areas include treed

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[3] Canadian Council of Forest Ministers (2018) National Forestry Database, Collaborators. Retrieved on August 1, 2018.

[4] Canadian Council of Forest Ministers (2018) National Forestry Database, Wood Supply - Background. Retrieved on August 1, 2018.

wetlands (swamps) and land with slow-growing and scattered trees. They do not include land that is predominantly agricultural or urban."

Wood supply estimation

Wood supply, the volume of timber that can be harvested sustainably, is estimated for each province and territory. Wood supply levels are estimated for forests that are actively managed for timber, which is a subset of forests and other wooded land. Provincial and territorial wood supplies are summed to estimate Canada's wood supply.

Wood supply is the sum of 2 values:

1. The estimated Annual Allowable Cut (known as Allowable Annual Cut in British Columbia, and known as Guarantee of Supply in Quebec) for provincial Crown lands, that is, publicly owned lands under provincial jurisdiction.

The estimated Annual Allowable Cut is the volume of industrial roundwood that can be harvested sustainably each year from provincial Crown lands, as estimated by professional foresters. Provincial Crown lands make up 77%[5] of Canada's forest, but the percentage varies by province. Most provinces establish Annual Allowable Cuts levels for their Crown lands based on a policy of maintaining a non-declining future wood supply. They also consider a range of additional factors. For example, Annual Allowable Cuts levels may be decreased in order to maintain animal habitat, or they may be increased so that insect-damaged wood can be salvaged. The importance of individual factors to the Annual Allowable Cut varies among provinces and even among forest management areas within provinces, due to regional differences in forestry policies. Each province is responsible for the extensive rationale behind an Annual Allowable Cut determination for individual forest management areas. Additional information is available from provincial resource management organizations.[6] The volume of wood harvested may be above or below the Annual Allowable Cut in any one year, but it must balance out over the regulation period, which varies from 5 to 10 years depending on the jurisdiction. Annual Allowable Cuts are set based on an assessment of a wide range of ecological, social and economic factors, therefore they are only a proxy for the sustainable level of harvest.

and

2. Estimates of wood supply on federal, territorial and private lands.

Federal, territorial and private lands account for 2%, 13% and 6%,[7] respectively, of Canada's forest land. The remainder is municipal (0.3%), aboriginal (2%) and other (0.4%). Wood supply estimates on federal, territorial and private lands are based on sustainable management plans (when available) or on past harvest levels. Estimation methods are not standardized and may or may not be similar to those used for the Annual Allowable Cut on provincial lands.

Because historical harvests are often used to estimate wood supply, recent declines in harvest levels have led to a decreased estimate of wood supply in some jurisdictions. This does not necessarily imply a change in forest health or harvest sustainability.

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[5] Natural Resources Canada, Canadian Forest Service (2017) The State of Canada's Forests. Annual Report 2017. Retrieved on December 7, 2017.

[6] Canadian Council of Forest Ministers (2018) National Forestry Database. Collaborators. Retrieved on August 1, 2018.

[7] Natural Resources Canada, Canadian Forest Service (2017) The State of Canada's Forests. Annual Report 2017. Retrieved on December 7, 2017.

Industrial roundwood harvest estimations

Canada's total industrial roundwood harvest is the sum of the following:

1. The reported industrial roundwood harvested from provincial Crown lands.

Provincial laws require harvest from provincial Crown lands to be reported and compared to the Annual Allowable Cut value for individual forest management areas. The harvest must not exceed the Annual Allowable Cut over multi-year regulation periods. However, in a given year, the volume harvested may vary by as much as 50%, depending on a range of social, economic and environmental factors.

and

2. The estimated industrial roundwood harvested from federal, territorial and private lands.

Because there is generally no legislated mechanism to report the volume harvested on these lands, it is estimated by either provincial or federal forest authorities located in that jurisdiction. Harvest from federal, territorial and private lands is not regulated, meaning that harvesters are not required by law to compare their harvest to a sustainable level.

Recent changes

Minor adjustments to data from previous years continue to be made as source data are revised and updated.

Caveats and limitations

National figures can mask variability between areas. In some cases, figures are either unavailable or too small to be expressed or included in the national aggregate values.

More information

National aggregation can mask Crown harvests above or below the Annual Allowable Cut in individual provinces. Similarly, the provincial aggregates can mask variability among management areas. If harvesting above the Annual Allowable Cut occurs in a portion of a regulation period, it may be balanced at another time or location in such a way that the overall Annual Allowable Cut of the regulation period is not exceeded.

Detailed caveats on the quality or completeness of annual data from individual provinces and territories, including explicit indications of which data are estimates, can be found in the National Forestry Database.

Annual Allowable Cuts are calculations of the sustainable wood supply on Crown lands established by professional foresters with the objective of maintaining sustainable wood supplies over long periods. Annual Allowable Cuts calculations use sophisticated growth models and scientific data to help estimate future wood supply and take into consideration fluctuating social, economic or environmental factors.

A large percentage of forest land in Atlantic Canada is privately owned. According to the State of Canada's Forests. Annual Report 2011, 50% of forest land is private in New Brunswick, while 68% is private in Nova Scotia and 91% is private in Prince Edward Island. In Newfoundland and Labrador, forest land is 99% provincially owned, but 69% of the timber rights to Crown land on the island of Newfoundland are leased on 99-year leases to pulp and paper companies, therefore that land is treated as private property. Because of the high percentage of private land in Atlantic Canada, provincial agencies that determine Annual Allowable Cuts must also assess the potential timber supply on private land. Because private woodlots are not regulated by legislation, there is uncertainty associated with this portion of the wood supply equation. However, as the Atlantic region accounts for only about 10% of Canada's total wood supply, the uncertainty on a national scale is small.

Wood supply estimates for private lands are often based solely on the average of actual past harvests, which are generally unregulated. Although estimates are provided, it is difficult to be certain whether harvesting on those lands is sustainable.

The Canadian Environmental Sustainability Indicators (CESI) program uses the total land area of Canada to calculate the proportion of the country covered by forest. Canada's National Forest Inventory also reports that an additional 8% of Canada's land is covered by other land with tree cover and other wooded land.[8]

Resources

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[8] Canada's National Forest Inventory (2013) Area of forest and non-forest land in Canada. Retrieved on December 7, 2017.

Annex

Annex A. Data table for the figure presented in this document

Table A.1. Data for Figure 1. Wood supply and annual harvest of industrial roundwood, Canada, 1990 to 2016

Year	Wood supply (million cubic metres)	Industrial roundwood harvested (million cubic metres)	Industrial roundwood harvested as a proportion of wood supply (percentage)	Total roundwood harvested (million cubic metres)
1990	254.4	156.4	61	162.6
1991	252.5	154.2	61	160.9
1992	248.0	163.7	66	170.1
1993	243.9	169.6	70	176.0
1994	244.5	177.4	73	183.3
1995	240.5	183.2	76	188.5
1996	241.0	177.9	74	183.4
1997	243.5	183.6	75	188.7
1998	239.6	173.9	73	177.0
1999	243.4	196.7	81	199.6
2000	236.7	199.5	84	202.4
2001	238.2	184.4	77	187.3
2002	239.4	195.4	82	198.2
2003	241.4	181.4	75	184.3
2004	248.6	208.1	84	210.9
2005	246.3	201.3	82	205.7
2006	248.6	182.5	73	185.4
2007	252.8	162.1	64	165.9
2008	251.8	138.3	55	141.4
2009	241.3	115.8	48	118.9
2010	237.0	141.0	59	144.3
2011	232.0	146.8	63	150.5
2012	229.9	149.2	65	153.2
2013	227.2	151.0	66	155.5
2014	229.7	150.3	65	155.1
2015	228.0	155.7	68	160.2
2016	223.1	154.7	69	156.7

Note: Wood supply data presented are for industrial roundwood only. The total roundwood harvested column includes harvest of industrial roundwood, fuelwood and firewood.
Source: Canadian Council of Forest Ministers (2017) National Forestry Database.

Additional information can be obtained at:

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